

Remarks

Claims 1-19 are pending in the present application, of which claims 1 and 12 are independent claims. Prior rejections have been overcome by Applicant's response of June 30, 2006. However, new rejections have been made, as discussed below.

Apparatus claims 1-8, and 11 have been amended for clarification. Independent method claim 12 has been amended in a manner consistent with claim 1, and dependent claims 13-19 have been amended for clarification. New independent method claim 20 has been added and is generally directed to the same invention as provided in claim 12.

§103 Rejections

Claims 1-19 were rejected under 35 USC §103(a) as being obvious in view of U.S. Pat. No. 5,377,103 to Lamberti et al. ("Lamberti") and U.S. Pat. No. 5,748,974 to Johnson ("Johnson").

Lamberti

Briefly, Lamberti discloses a computer-based "context-sensitive" help-function, "wherein the computer uses a constrained natural language [CNL] query input to search an internal "help" system for all instances of a match between a user query and an action or accompanying object represented in the knowledge base." (Lamberti, col. 4, lines 4-9) The computer *syntactically* parses the CNL input into a case frame structure (see *case frame structure* 50 in FIG. 2); *syntactically* filters the case frame structure into a broadly defined goal expression, i.e., VERB(Subject, Object, Modifiers), (see *broadly defined goal expression* 52 in FIG. 2); case frame filter 22 converts the broad goal expression into a detailed goal expression (see *goal expression* 54 in FIG. 2); compares the goal expression with *goal expression data structures* in the knowledge base in search of an identical match; if there is an identical match, the identical match is paraphrased and sent to the user. This all happens in a "browse mode." (See, e.g., Lamberti, Abstract and col. 4, lines 4 – 34) Actual responses are given in an "answer" mode.

That is, the *browse* mode provides possible solutions, without verification, as a first level of response and the *answer* mode is based on further user input to eliminate

ambiguity by selecting from the possible solutions provided in the *browse* mode – it's a help system requiring two user inputs to get the eventual response.

According to Lamberti, the main searching technology is the matching of the goal expression with the identical goal expression data structures. (Lamberti, col. 4, lines 55-58, emphasis added) The goal expression data structures take the form of “a verb and remaining syntactical portions of the natural language input.” (see, e.g., Lamberti, col. 3, lines 48-49 and goal expression 52 in FIG. 2) The knowledge base constructs, i.e., the form of the goal expression data structures, take one of 4 forms: (1) Command-frames; (2) Action-frames; (3) Goal-rules; and (4) Consequence-Rules. These are domain specific constructs relating to predetermined functions within the domain – because it's a *help* system. For matching purposes, each of these includes one or more possible goal expression data structures that each expresses an “intent” of the user's query. (Lamberti, col. 5, lines 24-49)

Lamberti gives a specific example of its operation (See Lamberti FIGS. 3 & 4, and related text):

<u>Input sentence:</u>	What can I erase?
<u>Goal Expression:</u>	Erase(_,[...])
<u>Matching Paraphrased Goal Expressions:</u>	ERASE FILE ERASE DIRECTORY ERASE SCREEN

Since Lamberti's is a *help* system, the questions and response are related to functions that can be performed within the computer. The above determination of the matching paraphrased goal expressions takes place in “browse” mode, which provides only possible solution responses. “By contrast, the “answer” mode requires that, for a response to be made to a query, the circumstances in the user's environment must be precisely ... defined in the knowledge base before providing the response.” (Lamberti, col. 5, lines 4-15) Again, a 2-level help system.

Johnson

In contrast, Johnson provides a multimodal natural language interface that receives a combined input, having one part that is from a current application and another part that is a user input/request, e.g., voice plus text. The system allows a user working in the current application to use a different, auxiliary application without leaving the current application or opening a new window. Its objective is to make more efficient the user's use of multiple applications through the GUI. (Johnson, Abstract; col. 1 lines 60 – col. 2 line 7) Johnson gives the example of typing the name Joe Smith (i.e., the application part) in a word processing application and verbally requesting an address for Joe Smith (i.e., the request part). The application part is referred to as an "item-of-focus." (Johnson, col. 3 lines 43-62)

The input in Johnson is semantically processed using a known state of the art natural language processor 45. Based on outputs of the natural language processor 45, a dispatcher 44 invokes an application manager 51 to determine which application should process the request. Application manager 51 then generates an API to the appropriate auxiliary application (e.g., a database program), opens it in the background, and retrieves the requested information. The requested information is provided to the user by a response generator 54.

FIG. 6 is a flow diagram of the application manager 51, which was referenced in the Office Action as teaching the semantically processed knowledge base S-A-Os of the present invention. The Office Action indicates that the application manager 51 "determines the semantic relationships of input" – it does not. Johnson's natural language processor 45 semantically processes the input and provides a semantic representation of the input to the application manager 51. The application manager determines the concepts in the semantic representation (provided by natural language processor 45) and then the application manager 51 "determines from the semantic representation each application that is registered with every concept in the semantic representation. This determination is made by referencing a concept/application table 63. ... Each application specific concept is listed along with the names of the applications registered with that concept in the concept/application registration table 63. This is

logically just a table where ... the columns are labeled with application names and the rows with concept names. An example is shown in FIG. 6A.” (Johnson, col. 5 line 59 – col. 6, line 4)

Claim 1

With respect to claim 1, the Office Action acknowledges that “Lamberti does not teach the knowledge base of semantically processed information.” However, the Office Action asserts that Johnson does, and that Lamberti teaches others element of claim 1. Claim 1 was amended to provide further clarity, and is produced below:

1. A system enabling a user to ask a question (query) and for providing the user with one or more answers or solutions to such question, the system comprising:
 - user apparatus for automatically generating first signals representative of a natural language user query that includes one or more query elements comprising (A-O), (S-A), (S-X-O), or (S);
 - a server coupled to a knowledge base of semantically and automatically processed information including a plurality of available answers in the form of S-A-Os, the server configured to:
 - identify from the one or more query elements at least one knowledge base element S, O, or A, or (A-O) associated with at least one respective knowledge base answer S-A-O that includes the one or more query elements, in response to the server receiving the first signals; and to
 - generate second signals representative of the at least one answer S-A-O, wherein the user apparatus is configured to generate a natural language audio message or visual display of the at least one answer S-A-O in response to receiving the second signals; and
 - communication devices configured to transmit the first signals from the user apparatus to the server and to transmit the second signals from the server to the user apparatus.

As a first matter, the combination of Lamberti and Johnson is improper, since it does not comport with the requirements of MPEP 706.02(j) and related case law. Specifically:

(1) There is absolutely no motivation in the references that would suggest a combination, nor would it be obvious of one of ordinary skill in the art to do so. Lamberti teaches a “help system” that provides functions that can be performed within a specific computer domain. Lamberti teaches that a new window is opened specific to the help system (see FIG. 4) – and expresses no aversion or motivation not to do to open such new window. In contrast, Johnson teaches a multimodal interface and system that allows a user working in a current application to perform a task in another (auxiliary) application without leaving the current application or opening a window in another application. In both cases a natural language input can be used – but that is where any similarity ends. The systems have nothing to do with each other, and they do not in any way solve the same or related problems. And Johnson’s concept-application table has no apparent relevance to Lamberti’s help system.

(2) Second, there is no reasonable expectation of success from the combination. Johnson teaches a table 63 that is not a knowledge base, does not provide answers of any kind, does not provide semantic expressions (nor S-A-O expressions), and provides no information that would appear to be useful in Lamberti’s help system. Johnson’s table 63 relates concepts (e.g., an address) to applications (e.g., a database application). “This is logically just a table where ... the columns are labeled with application names and the rows with concept names. An example is shown in FIG. 6A.” (Johnson, col. 5 line 59 – col. 6, line 4) As shown in FIG. 6A, reproduced below, table 63 is not a knowledge base of semantic representations, as suggested in the Office Action, but is merely a table as stated in Johnson.

App :			
Con \	Al . . .	Ai . . .	Ar
⋮			
Person		✓	✓
⋮			
Phone	✓	✓	
Fax		✓	✓
⋮			

(3) Finally, Lamberti and Johnson, when combined, do not teach or suggest all the claim limitations. Specifically, contrary to the view in the Office Action upon

which the present rejection rests, neither Lamberti nor Johnson, whether alone or in combination, teaches “a knowledge base of semantically and automatically processed information including a plurality of available answers in the form of S-A-Os” as required by amended claim 1.

Therefore, Applicant requests that the rejection based on the combination of Lamberti and Johnson be withdrawn and that claim 1 be allowed.

Additionally, Lamberti does not teach providing answers in S-A-O format, as required by claim 1. As noted in the Office Action, Lamberti does not teach a knowledge base of semantically processed information, nor does Johnson’s table 63. But the distinction is actually more profound. Lamberti also does not teach a knowledge base of *a plurality of available answers in the form of S-A-Os* as required by claim 1. Rather, the knowledge base in Lamberti consists of a plurality of *goal expression data structures* in the form of a verb plus the remaining syntactical portions of the natural language input, i.e., VERB(Subject, Object, Modifiers) – explicitly not an S-A-O form.

The matter is that Lamberti’s format is oriented on specific knowledge base constructs (command-frames, action-frames, goal-rules and consequence-rules), and Lamberti’s data representation in this format is based only on syntactic analysis of natural language input and the above-mentioned constructs. In contrast, S-A-O format is a universal format, i.e. a knowledge representation format that does not depend on subject domain at the level of objects and facts that are automatically recognized in the present case within natural language user query and text documents. This recognition is possible only on the basis of semantic analysis which is not used by Lamberti at all.

It would not be obvious for Lamberti to provide a knowledge base with possible solutions in S-A-O format because Lamberti, as a domain specific help system, is concerned with providing a list of possible functions that can be performed (e.g., ERASE FILE, ERASE DIRECTORY ...). Consistent with its emphasis, the structure of Lamberti’s knowledge base (i.e., Verb + ...) dictates that the form of its possible solutions is Verb + ..., since the only difference between the two is the stripping away of parenthesis and punctuation. (Lamberti, col. 5, lines 19-24 and lines 50-59) Thus, Lamberti teaches an output that is in Verb + ... form, which is explicitly different from

the knowledge base answers in the S-A-O format of claim 1, with no motivation in Lamberti to use an S-A-O format.

As a further distinction, Lamberti teaches a two-level approach to providing solutions: (1) browse mode; and (2) answer mode. Lamberti's *goal expression data structures* are used to provide possible solutions, but further user action is required since *the user's environment must be precisely defined in the knowledge base before providing the response*. That means user input is required in the browse mode, and then subsequent user input is required to transition to the answer mode where the solutions are provided. Claim 1 provides solutions directly, based on the initial input, a second input to transition to an answer mode is not required.

Additionally, Lamberti relies on formatting the user query into a case frame structure. Claim 1 does not do this, it takes a different approach, i.e., a semantic approach to analyzing the user query.

Accordingly, for various reasons Lamberti and Johnson, whether alone or in combination, do not teach or make obvious claim 1. Withdrawal of the rejections is respectfully requested.

Claim 2

Claim 2 depends from claim 1, and has been amended for clarification. Although, the Office Action acknowledges that Lamberti (and apparently Johnson) does not teach the element added by claim 2, the Office Action asserts that the Background section of the present application does.

Claim 2 reads as follows:

2. A system as set forth in claim 1, wherein said server conducts a search of the World Wide Web, identifies documents that include new answer S-A-O's each comprising an element or elements that match the one or more query elements, stores links to such documents, and adds such new answer S-A-O's to the knowledge base, and wherein the server includes, as part of the second signals, representations of each of the new answer S-A-O's.

To clarify, the Background section of the present application does not in anyway suggest that, prior to its priority date of April 20, 2000, query and response systems were capable of searching a specific server and also searching the Web for responses. In fact, the Background suggests the opposite when it states:

There is a need for such a system that can dynamically search all databases of the stored documents on the World Wide Web ... downloads candidate documents; processes them dynamically to determine if the downloaded document contains an answer to the query. ... extracting the answer and presenting it to the user and adding the query, answer and document link to the answer database.

(Present App., para. [0005])

The assertion in the Office Action that it would have been obvious to one of ordinary skill in the art “to incorporate a communication device within Lamberti’s computer for accessing the Internet with the motivation of providing user access to the numerous fundamental technical publications thereby expanding the system’s capability to retrieve that information” is not supported and overly generalizes the various sub-elements of claim 2.

Note that for claim 2 to be obvious, each of its sub-elements must be obvious. The sub-elements include:

- (1) the server conducts a search of the World Wide Web,
- (2) the server identifies documents that include new answer S-A-O’s each comprising an element or elements that match the one or more query elements,
- (3) the server stores links to such documents,
- (4) the server adds such new answer S-A-O’s to the knowledge base, and
- (5) the server includes, as part of the second signals, representations of each of the new answer S-A-O’s.

Applicant contends that each and every sub-element would not have been obvious to one of ordinary skill in the art in April of 2000, particularly in combination with claim 1.

Beyond the above, Lamberti is internally focused, not externally focused. In fact, Lamberti explicitly states that “The invention provides a context-sensitive browsing capability for a computer wherein the computer uses a constrained natural language query

input to search an internal “help” systems knowledge base...” (Lamberti, col. 4, lines 4-7, emphasis added) In reality, contrary to the suggestion in the Office Action, Lamberti teaches away from an external broadening search.

Accordingly, for various reasons Lamberti, Johnson, and the Background section of the present application, whether alone or in combination, do not teach or make obvious claim 2. Withdrawal of the rejections is respectfully requested.

Claims 3-11

Claims 3-11 each depend from claim 1, and for reasons similar to those put forth above for claims 1 and 2, withdrawal of the rejections to claims 3-11 is also requested.

Claims 12-19

Claim 12 is an independent method claim, having elements corresponding to those of claim 1. There were no specific rejections made to claim 12 and its dependent claims 13-19. However, if claim 12 was rejected on grounds similar to those of claim 1, then Applicant respectfully requests withdrawal of such rejection.

Claim 13 includes elements corresponding to those of claim 2. Thus, if claim 13 has been rejected, for the same reasons as put forth for claims 1 and 2, Applicant requests removal of the rejection.

Claims 14-19 have elements variously corresponding to those of claims 3, 4, 5, 6, 7, 9, and 10. Thus, if claims 14-19 have been rejected, for the same reasons as put forth for claims 3, 4, 5, 6, 7, 9, and 10, the Applicant requests removal of those rejections.


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Applicant believes that the present application is in condition for allowance. A Notice of Allowance is respectfully solicited. Should any questions arise, the Examiner is encouraged to contact the undersigned.

Authorization is hereby given to charge Deposit Account No. 501798 for all fees that are due with this response, which have not otherwise been paid, and to credit any overpayments to the same Deposit Account.

Respectfully submitted,

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